

The Institute Spokesman

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Special Lubrication Fittings*

By T. H. STAMBAUGH, Director of National Service Operations
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There has been a lot of publicity given to special lubricants in recent years, but little attention paid to special purpose fittings.

Hudson engineers are not satisfied to specify the correct lubricant and the quantity to be used but have endeavored to make the job as simple as possible and insure the correct quantity at important points.

The water pumps used on Hudson cars from 1936 to date have a grease reservoir between the two bearings and if this is filled at regular intervals correct lubrication of the bearings is assured. If, however, the pressure of the grease gun is applied after the

To prevent overfilling, the fitting shown in Figure 1 was developed. Grease can be forced into this fitting until the reservoir is filled. If additional grease is supplied, pressure is built up in the reservoir, pushing the plunger in the fitting upward and closing the entrance. Watch for the plunger to rise from the top of the fitting.

Front axle spindle pivot pins are subjected to continuous pounding and road shock and even the best lubricant may be pounded off the bearing surfaces in a few hundred miles and, if no additional lubricant is supplied, hard steering and wandering will be experienced until the car is again lubricated.

To prevent this condition, a special reservoir type fitting was developed (Figure 2). When grease is supplied to this fitting, it flows into the spindle pin bushing and also into the reservoir, pushing the leather piston upward against its spring. As additional lubricant is needed the spring forces the plunger downward, delivering the lubricant from the reservoir to the bearings.

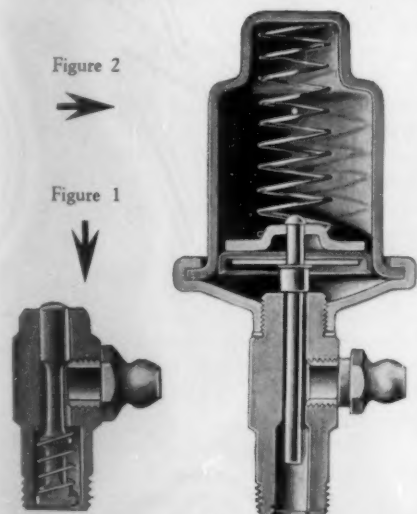
This reservoir fitting was first used in 1936 and, since there was no passage from the upper to the lower spindle pin bushing, a fitting was used for each. The 1937-1941 spindle pin is drilled to add to the reservoir capacity and also to act as a communication passage between the upper and lower bearings so that one fitting mounted in the upper bearing is used to supply both.

Since it was difficult to tell when the reservoir had been filled and there was also a possibility of the lower passage becoming air bound, a relief valve (Figure 3) has been incorporated in the bottom of the axle

yoke or spindle support. The spring on this relief valve is heavier than the one in the upper fitting, so that the reservoir will be filled before the valve opens.

When lubricating spindles, which are equipped with this valve, continue supplying grease until it comes out of the valve. This assures the filling of the reservoir and the removal of all air from the passages.

The adapter which is connected to the speedometer drive gears (1936-1940 models inclusive) to drive the automatic clutch governor presented a new problem in measuring lubricant. This adapter should not be



reservoir is filled, the grease may be forced past the water seal and enter the cooling system.

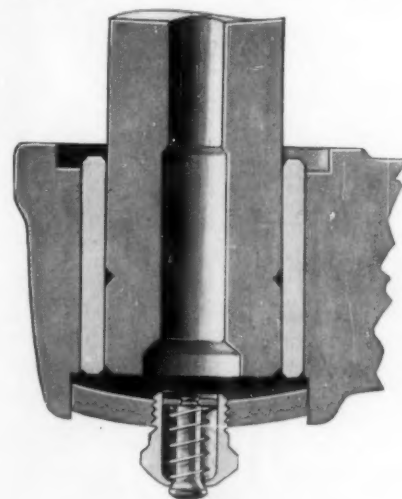


Figure 3

completely filled, as excess lubricant may work up into the governor. It was therefore necessary to develop a fitting that would

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Car Lubrication Points Decreasing Slightly

By J. HOWARD PILE, Editorial Director of CHEK-CHART

Over a period of 10 years, the average number of lubrication points on passenger cars shows a reduction from 43.1 to 34.4. This is a reduction of 8.7 lubrication points in 10 years, or .87 lubrication points per year. In 10 years it is a total reduction of 2%.

This reduction is much less than many people think. We are inclined to assume that the wider use of rubber shackles and self-lubricating bearings has greatly reduced the number of points to be lubricated. However, during this 10 year period other features of design have increased the number of lubrication points. Knee action accounts for a number of increases in points requiring lubrication.

Here is a tabulation of the number of lubrication points from 1931 to 1940:

	Average Number Lubrication Points	Greatest Number on Any Car	Lowest Number on Any Car
1931	43.1	62	26
1932	43.6	60	26
1933	40.9	60	25
1934	39.1	55	22
1935	38.8	55	23
1936	38.0	45	24
1937	37.7	48	24
1938	36.4	46	24
1939	34.7	45	21
1940	34.4	45	21

DESIGNS REDUCING THE NUMBER OF LUBRICATION POINTS

Rubber Mounted Spring Shackles — In the beginning of the period from 1931 to 1940 practically all springs were provided with bolts and shackles of a type that required lubrication. These were either steel bolts operating in bronze bushings or were Tryon shackles, steel against steel. Over a period of a few years beginning with 1931, model after model adopted rubber mounting of spring ends. In following through the designs, it is sometimes found that a manufacturer will adopt rubber mountings at the front ends of rear springs while the rear shackles require lubrication.

In a following year the rubber mountings will be continued at the front end, one of the shackle bolts at the rear will be mounted in rubber, and the other will require lubrication. The following year he may adopt rubber for all points, thus eliminating entirely any lubrication points at the spring ends themselves. Sometimes this progress toward the use of rubber is gradual on both the front and rear springs, and sometimes it applies to either one or the other.

Needle Type Universal Joints—The use of this type of joint began shortly after 1932 and in a few years was used at least in part by practically all car makers. When needle type universal joints were first put on propeller shafts, it was generally assumed that they had sufficient lubricant in them at assembly to last the life of the car, and the early instructions for universal joints were so worded. This, of course, reduced the number of points to be lubricated on such models.

However, service experience in the course of the next couple of years indicated that the joints would not give greatest satisfaction without further attention. Recommended mileages for disassembly, cleaning and re-packing were included in manufacturers' recommendations, these starting at 30,000 miles and, in some cases, being reduced to periods as low as 10,000 miles. Therefore, such units which were at one time eliminated as lubrication points, have come back into the picture again, although they do not have to be lubricated as frequently as the older type universal joints that were in use before the needle type came into the picture.

Hydraulic Brakes—While the brake shoes themselves have no definite points of lubrication, car models using mechanical brakes previous to 1932 or 1933 often had as many as eight or ten lubrication points on the various rocker shafts which were attached to the rear axle, to the drive shaft or to some other places. The introduction of hydraulic brakes, of course, eliminated all lubrication points on the brake mechanism with the possible exception of the brake pedals.

In spite of the fact that between the period of 1933 and 1939, all General Motors units and all Ford units went over to hydraulic brakes, parking brake systems of the mechanical type were retained; consequently some lubrication points remain on most models for the servicing of these brakes. At present all cars use hydraulic brakes with the exception of American Bantam and Crosley.

Coil Springs — These have been introduced within the past couple of years on Oldsmobile and Buick models and, of course, serve further to reduce the number of points of lubrication because no lubrication whatsoever is required on coil springs.

DESIGNS INCREASING THE NUMBER OF LUBRICATING POINTS

Knee Action—While some of the later models using knee action have rubber or prelubricated bearings at some points, on

the whole the number of points requiring lubrication on the average knee action job is greater than the number of points on a conventional front end job.

Knee action first came into the picture in 1934 with some General Motors and Chrysler models and is now used on all cars with the exception of Ford, Lincoln-Zephyr, Mercury, Willys, American Bantam and Crosley. In 1940 both Hudson and Nash swung over to independently suspended front wheels. In the case of Hudson, this accounted for a net increase of two lubrication points. However, in the case of Nash, the total number of lubrication points for the car was reduced from 44 to 42 due to decreases at other places around the chassis.

Steering Column Gear Shifts—The number of actual lubrication points is not materially increased by this construction. However, there are a number of rods, levers and joints that require attention with an oil can; also in some of the constructions there are rubber mountings which require the application of a rubber lubricant in order to prevent squeaks.

Metal Spring Covers—The general introduction of metal spring covers over a period of years, either as optional or standard equipment, has added to the number of points to be lubricated on cars so equipped. In some cases springs are provided with rubber or alloy inserts on which lubrication is prohibited, but in other cases the encased springs have to be replenished with lubricant from time to time; this is taken care of by means of special clamps for use with grease guns.

INCREASED DIFFICULTIES

In spite of the fact that the number of lubrication points on automobiles has undergone a slight reduction from year to year, the difficulties in lubricating automobiles have increased.

In the first place, the inaccessibility of lubrication points has been extremely marked, especially in the past three or four years, due to the extreme lowering of bodies, fenders, skirts, etc. In the early part of the period beginning with 1931, all lubrication points were easily accessible or holes were provided in the sheet metal work through which a gun could be inserted. In automobiles made during the past few years this situation has entirely changed and, when covered with mud and greasy scum, the fittings are sometimes virtually impossible to find unless the operator knows exactly where to dig for them.

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Welcome

We wish to take the opportunity to welcome the Werner G. Smith Co. as an associate member. Mr. Haas of the Cleveland office will represent his company.

Special Lubrication Fittings

(Continued from page 1)

measure the exact quantity of lubricant that should be inserted. This fitting is shown in Figure 4.

When grease is supplied, the plunger is pushed down and the space above it filled with lubricant. When the gun is removed, the spring pushes the plunger upward as the grease slowly seeps by the plunger which is fitted with a slight clearance. Several minutes are required for the grease to pass from above the plunger into the adapter housing.

When lubricating this fitting, supply all the grease it will take, then remove the gun and do not supply additional grease until the normal mileage (1000) for the next lubrication has been reached.

These extra precautions to insure proper lubrication of Hudson cars will be appreciated when their functioning is understood. This is a good example of the continual efforts of Hudson Engineers to insure long life in Hudson products.

Editor's Note: Pressure gun fittings found on present day cars are usually of the ball type. Fittings known as relief fittings, which provide a release for excess lubricant over and above the quantity actually required, are found on some cars. These relief fittings are sometimes known as by-pass fittings. Mr. Stambaugh's well written story covers fittings of special design for proper lubrication of certain points. These fittings are not to be confused with relief type fittings.



Figure 4

Car Manufacturers' Latest Recommendations

WARNING

An entirely new type of lubricant is called for on the new underdrive transmissions provided on some 1941 Chrysler and De Soto models—Special EP Motor Oil. This is a 20W Motor Oil with which is compounded 10% sulphur saponifiable base. A number of oil companies are already placing this material on the market.

Be sure to consult your supplier and be sure that the correct lubricant is used. Damage to the unit, involving costs that you may be called upon to pay, may result from the use of the wrong lubricant. Chrysler and De Soto dealers are NOT provided with a special lubricant by the factories. It must be supplied by oil companies.

HYDRA-MATIC FLUID — Hydra-Matic fluid for the Oldsmobile Hydra-Matic drive is recommended by the factory to be se-

cured from Oldsmobile dealers or the factory. The use of any other fluid is at the responsibility of the service station or supplier. The only exception to this is that 20W Motor Oil may be installed in emergency only and until such time as genuine Olds fluid may be installed.

These are factory instructions.

There may be fluids and lubricants placed on the market which will perform properly but unless you secure a guarantee from the supplier that he will make good on all damages, you may find yourself holding the bag.

Remember that if recommended lubricants are not used the car factory guarantee is off and any damage, whether caused by the fluid itself or in the mechanism will be entirely the responsibility of the person installing the fluid.

Car Lubrication Points Decreasing Slightly

(Continued from page 2)

Another feature that has added to the lubrication man's difficulties are the newer type hoods—the alligator type and those opening on top only. The older type engines were clearly exposed when the hoods were raised, but these modern hoods expose little for the lubrication man to operate on and make it necessary for him to reach down into places that are not easy to get at and in which the light conditions are anything but good.

The difficulties of the lubrication man have also been increased by the greater number of types and grades of lubricants required in order to comply with recommendations of the car manufacturers.

In 1931 we could lubricate practically all makes of cars with one gear lubricant for both transmission and differential. This was a regular straight gear lubricant; one grade for summer and another grade for winter. Compare this with the situation today—when manufacturers' recommendations for various differentials and transmissions include Passenger Car Duty Hypoid Lubricant, Truck Duty Hypoid Lubricant, Mild Extreme Pressure Lubricant, Regular Gear Lubricant, and Motor Oil for automatic transmissions and transmissions equipped with overdrive. These lubricants must be stocked in grades to meet different temperature conditions for winter and summer in different parts of the country.

In addition to the above, there are the special fluids required for Chrysler's Fluid

Drive and Oldsmobile's Hydra-Matic transmission, developed within the past year or so.

In the servicing of metal covered springs, three different types of spring lubricant are called for by car makers.

With the very extended use of rubber mountings, rubber bushings, and rubber bearings, there is considerable objection on the part of the car owner to squeaks which develop at such points, for which the car manufacturer provides no lubricant recommendations. A special rubber lubricant is a necessary thing in every service station performing car lubrication.

In addition to the rubber parts around the chassis that develop squeaks from time to time, there is also a greater number of body parts that require lubrication with either a rubber lubricant, a lubrication stick or an oil can.

All of these items call for increased stocks of materials, and for apparatus with which to dispense and apply them.

In spite of the fact that the difficulties in lubricating automobiles have vastly increased from 1931 to 1940, the average price asked by the service station for a lubrication job in 1940 is far less than the price asked in 1931.

All told, the car owner is getting much more for his money today in a lubrication job than he did in 1931, insofar as workmanship and materials are concerned.

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